

Application No.: 09/522,709

OCT 30 2007

Amendments To The Claims

1. (Currently amended) A method of using a computer for managing risk in a market related to a commodity delivered over a network comprised of tradable network locations, comprising the steps of:

~~using a computer for~~ modeling locational prices of the commodity in the market as a linear combination of congestion prices for congestible lines in the network; and  
~~using a computer for~~ producing a combination of price risk instruments for the market in which the amounts of each of the price risk instruments are proportioned to cause the eventual locational prices to be interlocked a proportion such that an effect of the congestion prices for the congestible lines on the locational prices of the commodity is reduced.

2. (Currently amended) The method according to claim 1, wherein the step of producing the combination of price risk instruments further includes the steps of creating a table of all credible congestion events with respect to tradable network locations; populating the table with values for the relative impact on the locational price of each credible congestion event:

creating from the table a portfolio of future positions;  
assessing the risk of each of future positions in the portfolio of future positions by assessing the number of credible congestion events would result in a loss for the portfolio; and  
determining from the assessment of risk which portfolio would result in the lowest risk producing the combination in a proportion such that the effect of the congestion prices for the congestible lines on the locational prices of the commodity is eliminated.

3. (Currently amended) The method according to claim 2, wherein the step of producing the combination creating a portfolio of future positions includes selecting a portfolio y of price risk instruments, such that:

**Application No.: 09/522,709**

$$z' \mathbf{A} - y' \mathbf{P}' \mathbf{A} = 0,$$

where  $\mathbf{A}$  represents distribution factors describing the physics of power flows in the network,  $\mathbf{P}$  represents the available market of price instruments, and  $z$  represents a market participant's underlying position in the market at a prospective time  $T$ , and wherein the portfolio includes a set of positions and primes denote transpositions.

**4. (Canceled)****5. (Withdrawn)** A method of using a computer for evaluating a portfolio of price risk instruments in a market related to a commodity delivered over a network, comprising the steps of:

using a computer for estimating a plurality of distribution factors indicating effects on one or more congestible lines in the network due to transfers of the commodity at respective locations in the network; and

using a computer for evaluating the portfolio based on the estimated distribution factors.

**6. (Withdrawn)** The method of claim 5, wherein the step of evaluating the portfolio includes the step of calculating a cost  $f$  based on the formula  $f = (z' \mathbf{A} - y' \mathbf{P}' \mathbf{A})\lambda + y' \mathbf{F}$ , wherein:  
 $y$  represents the portfolio of price risk instruments;  
 $z$  represents underlying positions in the market at the prospective time;  
 $\mathbf{P}$  represents a market of available price risk instruments;  
 $\mathbf{F}$  represents prices for the available price risk instruments;  
 $\mathbf{A}$  represents the distribution factors;  
 $\lambda$  represents prices of congestion for the congestible lines; and  
primes denote transpositions.

**Application No.: 09/522,709**

7. (Withdrawn) A method of using a computer for hedging a set of underlying positions at a prospective time in a market related to a commodity delivered over a network, comprising the steps of:

using a computer for estimating a plurality of distribution factors indicating effects on one or more congestible lines in the network due to transfers of the commodity at respective locations in the network; and

using a computer for producing a portfolio of price risk instruments for the market based on the estimated distribution factors.

8. (Withdrawn) The method for hedging according to claim 7, wherein the step of producing the portfolio includes the step of eliminating an effect of congestion prices for congestible lines on prices of the commodity at respective locations in the network.

9. (Withdrawn) The method according to claim 7, wherein the step of producing the portfolio includes selecting a portfolio  $y$  of price risk instruments, such that  $z'A - y'P'A = 0$ , where  $A$  represents the distribution factors,  $P$  represents the available market of price instruments, and  $z$  represents the underlying position and primes denote transpositions.

10. (Canceled)

11. (Withdrawn) A method of using a computer for identifying arbitrage opportunities among a plurality of available price risk instruments in a market related to a commodity delivered over a network, comprising the step of:

using a computer for estimating a plurality of distribution factors indicating effects on one or more congestible lines in the network due to transfers of the commodity at respective locations in the network; and

**Application No.: 09/522,709**

using a computer for producing a portfolio of price risk instruments from among the available price risk instruments based on the estimated distribution factors, wherein a number of the price risk instruments is greater than a number of the one or more congestible lines.

12. (Withdrawn) The method according to claim 11, wherein the step of producing the portfolio includes selecting a portfolio  $y$  of price risk instruments, such that  $y'P'A = 0$ , where  $A$  represents the distribution factors, and  $P$  represents the available market of price instruments and primes denote transpositions.

13. (Canceled)

14. (Withdrawn) A method of identifying arbitrage opportunities among a plurality of available price risk instruments in a market related to a commodity delivered over a network using a computer, comprising the step of:

using a computer for modeling locational prices of the commodity in the market as a linear combination of congestion prices for congestible lines in the network; and

using a computer for producing a portfolio of price risk instruments from among the available price risk instruments in a proportion such that an effect of the congestion prices for the congestible lines on the locational prices of the commodity is eliminated, wherein a number of the price risk instruments is greater than a number of the one or more congestible lines.

**Application No.: 09/522,709**

15. (Withdrawn) The method according to claim 14, wherein the step of producing the portfolio includes selecting a portfolio  $y$  of price risk instruments, such that  $y'P'A = 0$ , where  $A$  represents the linear combination, and  $P$  represents the available market of price instruments and primes denote transpositions.

16. (Canceled)

17. (Currently amended) A computer-readable medium bearing instructions for managing risk in a market related to a commodity delivered over a network, said instructions being arranged to cause one or more processors upon execution thereby to perform the steps of:

modeling locational prices of the commodity in the market as a linear combination of congestion prices for congestible lines in the network; and

producing a combination of price risk instruments for the market in which the amounts of each of the price risk instruments are proportioned to cause the eventual locational prices to be interlocked a proportion such that an effect of the congestion prices for the congestible lines on the locational prices of the commodity is reduced.

18. (Withdrawn) A computer-readable medium bearing instructions for evaluating a portfolio of price risk instruments in a market related to a commodity delivered over a network, said instructions being arranged to cause one or more processors upon execution thereby to perform the steps of:

estimating a plurality of distribution factors indicating effects on one or more congestible lines in the network due to transfers of the commodity at respective locations in the network; and

evaluating the portfolio based on the estimated distribution factors.

**Application No.: 09/522,709**

19. (Previously presented) A portfolio generating system and portfolio comprising:  
a computer-based system configured to generate a portfolio having a plurality of price risk  
instruments;

the portfolio comprising:

the plurality of price risk instruments for a market related to a commodity delivered over  
a network,

wherein the price risk instruments  $y$  are proportioned such that  $z' A - y' P' A = 0$ ,

$A$  represents distribution factors describing the physics of power flows in the network,

$P$  represents the available market of price instruments,

$z$  represents a market participant's underlying position in the market at a prospective time  $T$ ,

and

primes denote transpositions.

20. (Currently amended) The portfolio generating system of claim 19, wherein a number  
of the price risk instruments is greater than a number of the at least [[some]] one congestible  
lines.